



CHARACTERISTICS OF MICROFLORA IN PATIENTS WITH CHRONIC PURULENT RHINOSINUSITIS

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Article History	Abstract
Received: 11 October 2023 Revised: 10 November 2023 Accepted: 01 December 2023	In this section, 186 patients with chronic inflammatory processes of the nasal sinuses, including 84 patients with chronic purulent inflammation (group I), 66 patients with exacerbation of chronic inflammatory process (group II), 27 patients with exacerbation of chronic purulent rhinosinusitis and. The results of bacteriological examination were shown in 9 patients with recurrent odontogenic sinusitis (group III) and 9 patients with chronic purulent odontogenic sinusitis (group IV).
CC License CC-BY-NC-SA 4.0	Keywords: bacteriological studies, chronic purulent rhinosinusitis, intestinal streptococci, 98 patients.

INTRODUCTION.

The results of bacteriological studies of patients with chronic purulent rhinosinusitis in these groups are presented in Table 1.1.

It should be noted that the microflora in the paranasal sinuses affected by pansinitis and hemisinitis was, as a rule, the same in one and the same patient and

was identical to antibacterial drugs, and also had the same characteristics in the processes of toxin formation and pathogenicity.

Bacteriological studies of the secretions of the sinuses of the paranasal sinuses showed that in 45 patients (24, 86%) a non-clostridial anaerobic infection monoculture was detected from the sinus secretions, that is, aerobic flora in the monoculture was found in 38 patients (21, 0%), purulent aerobes isolated in anaerobes and intestinal together with flora - was found in 98 patients (54, 14%). In the course of chronic purulent rhinosinusitis, the percentage of non-clostridial anaerobic infection was higher than 4%. It should be noted that the monoflora (75.51%) in patients with exacerbation of chronic purulent sinusitis, on the contrary, the association of bacteria prevails in patients with chronic purulent rhinosinusitis (72, 73%)

1.1-table

Results of bacteriological studies of patients with chronic purulent rhinosinusitis

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Patient group	1 group			2 group			3 group			4 group			all group 1-4		
	m	a	a	m	a	a	m	a	a	m	a	a	m	a	a
	o	s	l	o	s	l	o	s	l	o	s	l	o	s	l
	n	s	l	n	s	l	n	s	l	n	s	l	n	s	l
	o	s	l	o	s	l	o	s	l	o	s	l	o	s	l
	c	o	l	c	o	l	c	o	l	c	o	l	c	o	l
	u	c	l	u	c	l	u	c	l	u	c	l	u	c	l
	l	i	l	l	i	l	l	i	l	l	i	l	l	i	l
	t	a	l	t	a	l	t	a	l	t	a	l	t	a	l
	u	t	l	u	t	l	u	t	l	u	t	l	u	t	l
	r	i	l	r	i	l	r	i	l	r	i	l	r	i	l
	e	o	l	e	o	l	e	o	l	e	o	l	e	o	l
	n			n			n			n			n		

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Aerobic microorganismEROB microorganisms															
Staphylococcus aureus															
St. epidermidis	2	4	6	3	5	8	1	2	3	1	1	2	7	12	19
St. pyogenes	-	3	3	-	2	2	-	1	1				1	6	6
St. faecalis		5	5	1	2	3		1	1					8	9
St. zymogens	2	5	7	3	4	7	1	2	3	1	1	2	7	12	19
St. durans	2	3	5	1	1	2					1	1	3	5	8
E.coli	1	2	3	1	2	3		1	1				2	5	7
Proteus vulgaris	3	6	9	3	4	7	1	2	3		1	1	7	13	20
Proteus mirabilis	1	4	5	1	2	3	2	1	3		1	1	4	8	12
Proteus morganii	1	2	3	1		1		1	1				2	3	5
Pseudomonas aeruginosa		2	2		1	1		1	1					4	4
Klebsiella	2	4	6	2	3	5		2	2				4	9	13
Enterobact. agglomerans		3	3	1	2	3		2	2				1	7	8

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Fungal flora		2	2											2	2
Total		3	3					1	1					4	4
It did not grow	14	48	62	17	28	45	5	17	22	2	5	7	38	98	136
			3			1			1					5	
Anaerobic bacteria															
Bacteroldeus															
Fusobacterlum	8	23	31	10	12	22	2	7	9	1	3	4	21	45	66
Vlellonella	7	16	23	7	8	15	2	6	8		1	1	16	31	47
Peptococcus	1	2	3		2	2		1	1				1	5	6
All anaerobes	3	7	10	3	6	9		3	3	1	1	2	7	17	24
All bacterial strains	19	48	67	20	28	48	4	17	21	2	5	7	45	98	143
			133			94			46			14			287

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The results of the analysis of the indicators of Table 1.1 showed that among the aerobic bacteria in the secretions of the paranasal cavities of patients of all groups, "intestinal" flora resistant to pathogenic and antibacterial drugs was found in the form of a monoculture (60, 53%) and in the form of an association of cultures (62, 24%).

Purulent gram-positive cocci were cultivated less in monoculture (21.05%) and in the form of association of cultures (26.53%). Therefore, the role of purulent cocci in chronic rhinosinusitis, especially in group I, III and IV patients, is significantly reduced. A high rate of survival in patients is noteworthy (37, 04%), and in group III (46, 5%) *Escherichia coli* and *Pseudomonas aeruginosa* were detected. Apparently, the occurrence of highly aggressive types of aerobic infection, unusual for the respiratory tract, is associated with the general resistance of the patient's body and the weakening of the immune forces due to a long-term slow purulent inflammatory process in the side cavities of the nose. This situation indirectly indicates that the patients are at high risk of infection with the microflora characteristic of the gastrointestinal tract, that is, the so-called "hospital infection", which includes *Escherichia*, *Pseudomonas* and protein infections, which is confirmed by the frequent cultivation of secretions in their group III patients (46, 5 %), indicates that he has undergone several surgical interventions in the past. Gram-positive enterococci, like *Str. zymogenes* i *Str. durans* (25.0%), their role in causing purulent diseases of the paranasal sinuses has not been covered in many studies.

Probably, the appearance of intestinal streptococci as an etiological factor in the nasal cavity (in 12 patients with monoculture and in 22 associated patients) is associated with the development of chronic purulent, purulent-polypous rhinosinusitis and their complications of orbital inflammation, a sharp weakening

of the immune system and the general resistance of the patient's body. related to the decline.

MAIN PART.

It is worth noting that in 8 cases, Klebsiella from the less aggressive conditionally pathogenic gram-negative bacteria were detected in the secretions of the paranasal sinuses, the appearance of such bacteria in microbial associations indicates a significant decrease in the body's immune system. In this case, saprophytic bacteria become aggressive microorganisms. In fact, acquired infectious immunosuppression can also occur in these patients, since 7 out of 8 patients with chronic purulent rhinosinusitis have been infected with this pathology for more than 10 years, so they rarely develop "opportunistic infections", in particular, klebsiella. From the data presented in Table 1.1, it can be seen that the specific weight of anaerobic non-clostridial bacteria was much higher than aerobic ($r < 0.001$). Anaerobic microflora is represented by various types of anaerobic non-clostridial bacteria.

Pathogenic species of obligate anaerobes were cultivated the most: Bacteroides fragilis - 19.5%; Bacteroides melaninogenicus - 12.59%; Fusobacterium pisleatum - 13.99%; Fusobacterium necroforum - 10.49%; Peptococctis 11.19% and others.

Therefore, anaerobic infection in chronic purulent-inflammatory processes in the paranasal sinuses cannot be considered a rare or accidental finding.

On the contrary, the vegetative growth of anaerobes in the foci of inflammation of the paranasal sinuses makes it possible to consider these pathogens as a characteristic etiological factor.

It should be noted that in the case of combined lesions of several sinuses at the same time, polypous rhinosinusitis, non-functioning sinusogenic natural openings, anaerobes together with faecal streptococci and Escherichia coli were significantly

detected. In these patients, the pus is characterized by a dirty green, dirty gray or "flesh wash" color and, as a rule, an unpleasant odor.

It is noted that anaerobic inflammation of the adjacent nasal cavities is often accompanied by obstruction of the natural rhinosinusogenous openings, uneven thickening of the mucous membrane of the sinuses and polyposis of the mucous membranes, and the presence of frothy fetid pus.

RESEARCH RESULTS.

Thus, anaerobes are often the etiological factor of chronic purulent polysinitis, obstruction of the natural openings of cavities and the presence of foamy or dirty-gray, dirty-green pus with a putrid smell is pathognomonic for an anaerobic infection. These clinical signs are important for indirect confirmation of the presence of anaerobic microflora for the timely correction of treatment with drugs against anaerobic infections until the final bacteriological confirmation of the anaerobic etiology of rhinosinusitis is obtained.

Therefore, in chronic purulent rhinosinusitis, the microbial biocenosis of the paranasal sinuses is characterized by a very diverse species composition, while gram-positive pathogenic representatives of the intestinal flora play a leading role during chronic rhinosinusitis and its exacerbation: *Enterococcus*, *Proteus*, *E.coli*, *Pseudomonas*, as well as non-spore-forming anaerobes: *Vas. fragilis*, *Vas. melaninogenicus*, *Fusobacterium nucleatum*, *Fusobacterium necroforum*, *Peptococcus* and others. Basically, the inflammatory process was severe with non-clostrid anaerobic bacteria and especially severe with the association of enterococci (18 patients), *Protea* (10 patients), *Pseudomonas* (7 patients), *Escherichia* (7 patients). Some of these patients (11 patients) had broncho-obstructive syndrome against the background of exacerbation of the chronic process and chronic focal infection,

which was associated with an increase in the viscosity of sputum, in which a large number of fibrin threads were found.

The leading method of conservative treatment of bacterial infection is antibacterial therapy with antibiotics and chemotherapy drugs. The effectiveness of such treatment largely depends on the sensitivity of the microflora to these drugs. Therefore, in addition to identifying different types of aerobic and anaerobic microflora, we determined the sensitivity of isolated bacterial strains to the main groups of antibiotics commonly used in otorhinolaryngological practice.

Susceptibility to antibacterial drugs was studied in 136 strains of aerobic and 143 anaerobic bacteria. Tables 1.2 and 1.3 show the percentage of bacterial cultures sensitive to antibiotics that can be determined in relation to the total number of studied strains of aerobes (136) and anaerobes (143).

As can be seen from the indicators in tables 1.2 and 1.3, the most popular and widely used antibiotics of the penicillin group (penicillin, ampicillin, oxacillin), gentamicin, tetracycline and polymyxin have very little activity against most aerobic and anaerobic pathogens.

At the same time, amoxicillin and cefotaxime have the greatest activity among effective anti-aerobic drugs, which reduced the activity of more than 75% of gram-positive and gram-negative aerobic strains. The results of this study justify the use of amoxicillin and cefotaxime in the treatment of chronic rhinosinusitis of polymicrobial origin ("aerobic + anaerobic" association). It should be noted that the isolated strains of staphylococci were less sensitive to gentamicin than to cefotaxime. The advantage of amoxicillin is that it was very sensitive not only to

staphylococci, but also to strains of gram-positive aerobes caused by intestinal infection.

CONCLUSION.

It is important to note that the antibacterial chemotherapeutic drug Metronidazole is an antibacterial drug active against gram-negative highly pathogenic anaerobes (bacteroids, fusobacteria and peptococci).

Thus, summarizing this section, it should be noted that the pathogenic aerobic and anaerobic flora isolated from purulent foci of the paranasal sinuses is very diverse in its composition.

The polymicrobial nature of the bacterial biocenosis of the paranasal sinuses in patients with chronic purulent rhinosinusitis is sensitive to only some antibacterial drugs in the presence of highly pathogenic aerobes and anaerobes. Also, the general increase in the resistance of the best-studied microorganisms to the most well-known antibiotics - all this made it possible to determine more effective methods of antibacterial treatment.

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